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side by side			
	DB=USPT; PLUR=YES; OP=OR		
<u>L17</u>	5671350.pn.	1	<u>L17</u>
<u>L16</u>	5673381.pn.	1	<u>L16</u>
<u>L15</u>	6003044.pn.	1	<u>L15</u>
	DB=PGPB,USPT,USOC,EPAB,JPAB,DWPI,TDBD; PLUR=YES; OP=OR		
<u>L14</u>	L13 and data near stor\$ near system	13	<u>L14</u>
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<u>L10</u>	L9 and (second or secondary) near connection	249	<u>L10</u>
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<u>L8</u>	709/253	587	<u>L8</u>
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<u>L6</u>	709.clas.	34731	<u>L6</u>
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<u>L4</u>	707/200	3827	<u>L4</u>

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L2 707/100
L1 707/10

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L12: Entry 3 of 4

File: USPT

Dec 9, 1997

US-PAT-NO: 5696901

DOCUMENT-IDENTIFIER: US 5696901 A

**** See image for Certificate of Correction ****

TITLE: Remote information service access system based on a client-server-service model

DATE-ISSUED: December 9, 1997

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Konrad; Allan M.	Berkeley	CA	94704	

APPL-NO: 08/ 653556 [\[PALM\]](#)

DATE FILED: May 24, 1996

PARENT-CASE:

This is a Continuation of Ser. No. 481642 filed Jun. 7, 1995 U.S. Pat. No. 5,544,320, issued Aug. 6, 1996 and application No. 08/001,982, filed Jan. 8, 1993 (now abandoned). That patent, including its microfiche appendix, is incorporated herein for all purposes.

INT-CL: [06] [G06 F 3/00](#), [G06 F 13/00](#)

US-CL-ISSUED: 395/200.09; 395/200.02, 395/200.15, 364/937.96, 364/222.2, 364/242.94, 364/242.95, 364/284, 364/284.4, 364/DIG.1

US-CL-CURRENT: [709/203](#); [709/202](#), [709/217](#)

FIELD-OF-SEARCH: 395/200.09, 395/200.02, 395/200.15, 395/200.03, 395/200.18, 395/200.2, 364/927.96, 364/222.2, 364/242.94, 364/242.95, 364/284, 364/284.4, 364/DIG.1, 364/DIG.2

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

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PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
<input type="checkbox"/> 4660141	April 1987	Ceccon et al.	395/829
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<input type="checkbox"/> 4949248	August 1990	Caro	395/200
<input type="checkbox"/> 5005122	April 1991	Griffin et al.	395/200
5073852	December 1991	Siegel et al.	395/700

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<input type="checkbox"/>	<u>5146561</u>	September 1992	Carey et al.	395/200
<input type="checkbox"/>	<u>5218697</u>	June 1993	Chung	395/650
<input type="checkbox"/>	<u>5218708</u>	June 1993	Kanbayashi et al.	395/800
<input type="checkbox"/>	<u>5224205</u>	June 1993	Dinkin et al.	395/200
<input type="checkbox"/>	<u>5245704</u>	September 1993	Weber et al.	395/200
<input type="checkbox"/>	<u>5249293</u>	September 1993	Schuiiber et al.	395/200.03
<input type="checkbox"/>	<u>5301270</u>	April 1994	Steinberg et al.	395/161
<input type="checkbox"/>	<u>5341478</u>	August 1994	Travis, Jr. et al.	395/200
<input type="checkbox"/>	<u>5349678</u>	September 1994	Morris et al.	395/800
<input type="checkbox"/>	<u>5375207</u>	December 1994	Blakely et al.	395/200
<input type="checkbox"/>	<u>5392400</u>	February 1995	Berkowitz et al.	395/200
<input type="checkbox"/>	<u>5442749</u>	August 1995	Northcutt et al.	395/200.09
<input type="checkbox"/>	<u>5499343</u>	March 1996	Petus	395/200.2
<input type="checkbox"/>	<u>5515511</u>	May 1996	Nguyen et al.	395/200.02
<input type="checkbox"/>	<u>5548724</u>	August 1996	Akizawa et al.	395/200.03
<input type="checkbox"/>	<u>5574904</u>	November 1996	Yunoki et al.	395/601
<input type="checkbox"/>	<u>5596579</u>	January 1997	Yasrebi	395/678

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T. Charity, "The Integration of Multiple OS-9 Stations with a VAX/VMS Host Via Ethernet," IEEE Transactions on Nuclear Science, vol. 36, No. 5, (Oct. 1989), pp. 7126-1729.

Richard D. Verjinski, "Phase, a Portable Host Access System Environment," IEEE (May, 1989).

John Carson, "A Distributed Operating System for a Workstation Environment," IEEE, 1988, pp. 213-217.

ART-UNIT: 232

PRIMARY-EXAMINER: An; Meng-Ai T.

ATTY-AGENT-FIRM: Albert; Philip H. Townsend and Townsend and Crew LLP

ABSTRACT:

A local host computing system, a remote host computing system as connected by a network, and service functionalities: a human interface service functionality, a starter service functionality, and a desired utility service functionality, and a Client-Server-Service (CSS) model is imposed on each service functionality. In one embodiment, this results in nine logical components and three physical components (a local host, a remote host, and an intervening network), where two of the logical components are integrated into one Remote Object Client component, and that Remote Object Client component and the other seven logical components are deployed among the local host and remote host in a manner which eases compatibility and upgrade problems, and provides an illusion to a user that a desired utility service

supported on a remote host resides locally on the user's local host, thereby providing ease of use and minimal software maintenance for users of that remote service.

12 Claims, 16 Drawing figures

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L12: Entry 3 of 4

File: USPT

Dec 9, 1997

DOCUMENT-IDENTIFIER: US 5696901 A

**** See image for Certificate of Correction ****

TITLE: Remote information service access system based on a client-server-service model

Brief Summary Text (26):

The present invention provides an illusion to a user that a desired utility service supported on a remote host resides locally on the user's local host, thereby providing ease of use and minimal software maintenance for users of that remote service. In one embodiment of a Remote Object system according to the present invention, a user appears to activate a Remote Object as a service of the local host. The user actually activates a starter client, which connects to a starter server on the remote host via a starter connection. The starter server interacts with a starter service, which initiates a Remote Object client. The Remote Object client on the remote host then interacts, as a human interface client, with a human interface server on the local host via a second connection, the Remote Object client connection. The Remote Object client also interacts, as a desired utility client with either a desired utility server on the remote host, or directly with the desired utility service on the remote host.

Detailed Description Text (96):

Particular examples of desired utility services include a database management system, use of a specific database, an information service, a file storage service, a printing service, a backup service, a computational service, software libraries, and bibliographic reference utilities.

Detailed Description Text (315):

T18 (Local) By practicing Remote Object Protocol 6.1 and the Network Service Protocol, the Starter Client receives Remote Object Protocol 6.1 Termination Request(s) from the Starter Server, terminates the network connection to the Starter Server, presents Request(s) to the Human Interface Service to restore representation of the Starter Client to non-executing state, and then terminates Starter Client. If T18 fails, return error Request(s).

CLAIMS:

6. A method for providing end-user access via a human interface server located at a local host computer to a desired remote utility service on a remote host computer, comprising the steps of:

- a) initiating a starter server and a starter service on the remote host computer, and a human interface server on said local host computer, said local host computer being characterized as local with respect to a network location of an end user;
- b) presenting said end user with a means to indicate a desire to access the desired remote utility service;
- c) initiating a starter client in response to an indication by said end user of a desire to access the desired remote utility service;

d) using said starter client to issue an access start request to said starter server over a first network connection, said method of issuing said access start request being independent of a platform of the remote host computer;

e) using said starter server and said starter service to initiate a remote object client on the remote host computer wherein said remote object client further comprises means for translating a response from said human interface server into a translated response having a format expected by said desired remote utility service, and for transmitting said translated response to said desired remote utility service;

f) establishing bidirectional programmatic connectivity between said remote object client and the desired remote utility service;

g) establishing bidirectional programmatic connectivity between said remote object client and said human interface server over a second network connection;

h) issuing a human interface server request from said remote object client to said human interface server requesting interface to said end user; and

i) translating received responses to said human interface server request into a format understandable by the desired remote utility service.

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L12: Entry 4 of 4

File: USPT

Aug 6, 1996

US-PAT-NO: 5544320

DOCUMENT-IDENTIFIER: US 5544320 A

**** See image for Certificate of Correction ****

TITLE: Remote information service access system based on a client-server-service model

DATE-ISSUED: August 6, 1996

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Konrad; Allan M.	Berkeley	CA	94704	

APPL-NO: 08/ 481642 [\[PALM\]](#)

DATE FILED: June 7, 1995

PARENT-CASE:

This is a continuation of application Ser. No. 08/001,982, filed Jan. 8, 1993, now abandoned.

INT-CL: [06] [G06 F 3/00](#), [G06 F 13/00](#)

US-CL-ISSUED: 395/200.09; 395/200.15, 395/200.02, 364/927.96, 364/222.2, 364/242.94, 364/242.95, 364/284, 364/284.4, 364/DIG.1

US-CL-CURRENT: [709/203](#); [709/219](#), [709/228](#)

FIELD-OF-SEARCH: 395/200.02, 395/200.09, 395/200.12, 395/200.15, 395/200.20, 395/161, 395/200, 395/650, 395/829, 395/700, 364/DIG.1, 364/DIG.2

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

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	PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
<input type="checkbox"/>	4660141	April 1987	Ceccon et al.	395/829
<input type="checkbox"/>	4887204	December 1989	Johnson et al.	395/200
<input type="checkbox"/>	4949248	August 1990	Caro	395/200
<input type="checkbox"/>	5005122	April 1991	Griffin et al.	395/200
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<input type="checkbox"/>	<u>5341478</u>	August 1990	Travis, Jr. et al.	395/200
<input type="checkbox"/>	<u>5375207</u>	December 1994	Blakely et al.	395/200
<input type="checkbox"/>	<u>5392400</u>	February 1995	Berkowitz et al.	395/200

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Foley, James, D.; van Dam, Andries; Feiner, Steven K.; Hughes, John F., "Computer Graphics, Principles and Practice," Second Edition, Addison-Wesley Publishing Company (1992) pp. 72-81.

Russell, Lou, "Client/Server Process Partitioning, Do it Now or Do it Later," ClientServer Developer, (Mar., 1995), pp. 20-22.

Advertising Section, Datamation, (Mar. 1, 1995), pp. S-4, S-5.

T. Charity; "The integration of multiple OS-9 Stations with a Vax/VMS Host via Ethernet"; IEEE Transactions on Nuclear Science, vol. 36, No. 5 Oct. 1989; pp. 1726-1729.

Richard D. Verjinski; "Phase, A Portable Host Access System Environment"; May 1989 IEEE.

John H. Carson; "A Distributed Operating System for a Workstation Environment"; IEEE 1988, pp. 213-217.

ART-UNIT: 232

PRIMARY-EXAMINER: An; Meng-Ai T.

ATTY-AGENT-FIRM: Albert; Philip H. Townsend and Townsend and Crew LLP

ABSTRACT:

A local host computing system, a remote host computing system as connected by a network, and service functionalities: a human interface service functionality, a starter service functionality, and a desired utility service functionality, and a Client-Server-Service (CSS) model is imposed on each service functionality. In one embodiment, this results in nine logical components and three physical components (a local host, a remote host, and an intervening network), where two of the logical components are integrated into one Remote Object Client component, and that Remote Object Client component and the other seven logical components are deployed among the local host and remote host in a manner which eases compatibility and upgrade problems, and provides an illusion to a user that a desired utility service supported on a remote host resides locally on the user's local host, thereby providing ease of use and minimal software maintenance for users of that remote service.

12 Claims, 16 Drawing figures

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L12: Entry 4 of 4

File: USPT

Aug 6, 1996

DOCUMENT-IDENTIFIER: US 5544320 A

**** See image for Certificate of Correction ****

TITLE: Remote information service access system based on a client-server-service model

Brief Summary Text (28):

The present invention provides an illusion to a user that a desired utility service supported on a remote host resides locally on the user's local host, thereby providing ease of use and minimal software maintenance for users of that remote service. In one embodiment of a Remote Object system according to the present invention, a user appears to activate a Remote Object as a service of the local host. The user actually activates a starter client, which connects to a starter server on the remote host via a starter connection. The starter server interacts with a starter service, which initiates a Remote Object client. The Remote Object client on the remote host then interacts, as a human interface client, with a human interface server on the local host via a second connection, the Remote Object client connection. The Remote Object client also interacts, as a desired utility client with either a desired utility server on the remote host, or directly with the desired utility service on the remote host.

Detailed Description Text (73):

Particular examples of desired utility services include a database management system, use of a specific database, an information service, a file storage service, a printing service, a backup service, a computational service, software libraries, and bibliographic reference utilities.

Detailed Description Text (242):

T18 (Local) By practicing Remote Object Protocol 6.1 and the Network Service Protocol, the Starter Client receives Remote Object Protocol 6.1 Termination Request(s) from the Starter Server, terminates the network connection to the Starter Server, presents Request(s) to the Human Interface Service to restore representation of the Starter Client to non-executing state, and then terminates Starter Client. If T18 fails, return error Request(s).

CLAIMS:

8. A method for providing end-user access via a human interface server located at a local host computer to a desired remote utility service on a remote host computer, comprising the steps of:

- a) initiating a starter server and a starter service on the remote host computer, and a human interface server on said local host computer, said local host computer being characterized as local with respect to a network location of an end user;
- b) presenting said end user with a means to indicate a desire to access the desired remote utility service;
- c) initiating a starter client in response to an indication by said end user of a

desire to access the desired remote utility service;

d) using said starter client to issue an access start request to said starter server over a first network connection, said method of issuing said access start request being independent of a platform of the remote host computer;

e) using said starter server and said starter service to initiate a remote object client on the remote host computer;

f) establishing bidirectional programmatic connectivity between said remote object client and the desired remote utility service; and

g) establishing bidirectional programmatic connectivity between said remote object client and said human interface server over a second network connection

h) issuing an interface request from said remote object client to said human interface server requesting interface to said end user;

i) translating received responses to said human interface server requests into a format understandable by the desired remote utility service;

j) issuing said translated received responses as a utility service request from said remote object client to said desired remote utility service;

k) returning a utility service response to said utility service request from said desired remote utility service to said remote object client;

l) translating said utility service responses into a second interface request; and

m) issuing said second interface request from said remote object client to said human interface server.

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☐ 1. Document ID: US 6003044 A

L15: Entry 1 of 1

File: USPT

Dec 14, 1999

US-PAT-NO: 6003044

DOCUMENT-IDENTIFIER: US 6003044 A

TITLE: Method and apparatus for efficiently backing up files using multiple computer systems

DATE-ISSUED: December 14, 1999

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Pongracz; Gregory	Redwood City	CA		
Wertheimer; Steven	Kentfield	CA		
Bridge; William	Alameda	CA		

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
Oracle Corporation	Redwood Shores	CA			02

APPL-NO: 08/ 962086 [PALM]

DATE FILED: October 31, 1997

PARENT-CASE:

RELATED APPLICATIONS The subject matter of this application is related to the subject matter of attorney docket number 1027, application Ser. No. 08/962,539 entitled, "METHOD AND APPARATUS FOR RESTORING A PORTION OF A DATABASE" filed on Oct. 31, 1997 by C. Gregory Doherty, Gregory Pongracz, William Bridge, Juan Loaiza and Mark Ramacher, attorney docket number 1028, application Ser. No. 08/962,087 entitled, "METHOD AND APPARATUS FOR IDENTIFYING FILES USED TO RESTORE A FILE" filed on Oct. 31, 1997 by Gregory Pongracz, Steven Wertheimer and William Bridge, attorney docket number 1036, application Ser. No. 08/961,747 entitled, "METHOD AND APPARATUS FOR PRESERVING NON-CURRENT INFORMATION THAT CAN BE OVERWRITTEN IN A COMPUTER FILE" filed on Oct. 31, 1997 by Gregory Pongracz and Tuomas Pystynen, attorney docket number 1038, application Ser. No. 08/961,741 entitled, "METHOD AND APPARATUS FOR ACCESSING A FILE THAT CAN BE CONCURRENTLY WRITTEN" filed on Oct. 31, 1997 by Tuomas Pystynen and Gregory Pongracz having the same assignee as this application and incorporated herein by reference in its entirety.

INT-CL: [06] G06 F 12/00

US-CL-ISSUED: 707/204; 711/162

US-CL-CURRENT: 707/204; 711/162

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FIELD-OF-SEARCH: 707/204, 707/200, 707/208, 707/10, 395/826, 711/161, 711/162

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
<u>5515502</u>	May 1996	Wood	395/182.13
<u>5721916</u>	February 1998	Pardikar	395/617
<u>5790886</u>	August 1998	Allen	395/825
<u>5799322</u>	August 1998	Mosher, Jr.	707/202
<u>5819296</u>	October 1998	Anderson et al.	707/204
<u>5832522</u>	November 1998	Blickenstaff et al.	707/204
<u>5857193</u>	January 1999	Sutcliffe et al.	707/10
<u>5857208</u>	January 1999	Ofek	707/204
<u>5860122</u>	January 1999	Owada et al.	711/162

ART-UNIT: 277

PRIMARY-EXAMINER: Kulik; Paul V.

ATTY-AGENT-FIRM: Law Offices of Charles E. Gotlieb

ABSTRACT:

A system and method backs up computer files to backup drives connected to multiple computer systems. Each file in a backup set is allocated to one or more backup subsets for each of the multiple computer systems. The files can be allocated in an even number across each subset, allocated to evenly spread the number of bytes to each subset, or, using the capacity of each of the multiple computer systems, allocated so that each computer system can complete backing up the files allocated to it in approximately the same amount of time. The system can restrict the number of bytes continuously required from a single disk by one of the backup machines from exceeding a threshold limit. Each of the multiple computer systems is then directed to, and the computer systems do, back up files in one or more subsets, which may be allocated to that computer system.

17 Claims, 5 Drawing figures

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KMC	Draw De
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☐ 1. Document ID: US 5673381 A

L16: Entry 1 of 1

File: USPT

Sep 30, 1997

US-PAT-NO: 5673381

DOCUMENT-IDENTIFIER: US 5673381 A

TITLE: System and parallel streaming and data stripping to back-up a network

DATE-ISSUED: September 30, 1997

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Huai; ReiJane	Old Brookville	NY		
Daly; Robert	Ronkonkoma	NY		
Curti; Walter	Dix Hills	NY		
Mohan; Deepak	Huntington	NY		
Chueh; James Kuang-Ru	Bayside	NY		
Louie; Larry	Forest Hills	NY		

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE	CODE
Cheyenne Software International Sales Corp.	Roslyn Heights	NY				02

APPL-NO: 08/ 591120 [PALM]

DATE FILED: January 25, 1996

PARENT-CASE:

This application is a continuation of application Ser. No. 08/250,077, filed on May 27, 1994, now abandoned.

INT-CL: [06] G06 F 11/34

US-CL-ISSUED: 395/180; 395/489

US-CL-CURRENT: 714/1; 711/162

FIELD-OF-SEARCH: 395/180, 395/181, 395/182.04, 395/489, 395/620, 395/650, 364/238.4, 364/238.6, 364/239.6, 364/242.94, 364/242.95, 364/284.1, 364/284.4, 364/285.1, 371/8.1, 371/10.2

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

h e b b c g b e e c h e f

PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
<u>4744097</u>	May 1988	Haruhara	
<u>4751648</u>	June 1988	Sears, III et al.	
<u>4757267</u>	July 1988	Riskin	
<u>4820354</u>	April 1989	Minor	358/296
<u>5133065</u>	July 1992	Cheffetz et al.	
<u>5144551</u>	September 1992	Cepulis	
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<u>5187750</u>	February 1993	Behera	
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<u>5379374</u>	January 1995	Ishizaki et al.	395/200
<u>5386545</u>	January 1995	Gobmos, Jr. et al.	395/575
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<u>5504888</u>	April 1996	Iwamoto	395/600

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1994), Sytron Corporation.
Legato NetWorker Administrator's Guide, NetWare Version, Oct. 1993, Legato Systems,
Inc.

ART-UNIT: 243

PRIMARY-EXAMINER: Beausoliel, Jr.; Robert W.

ASSISTANT-EXAMINER: Decady; Albert

ATTY-AGENT-FIRM: Kenyon & Kenyon

ABSTRACT:

A method and system for parallel back-up of a plurality of client computers on a network, in particular, a local area network or wide area network. Each client computer has a local storage device that stores files. A number of back-up storage devices are organized into groups, with each back-up storage devices being a member of one group. A server computer is coupled to the plurality of back-up storage devices by a bus and is also coupled to the network. The server computer for executing a back-up job. The server computer accepts parameters for the back-up job, the parameters including a source parameter specifying a set of the client computers and a destination parameter specifying a group. The server computer receives files from each one of the set of client computers specified in the source parameter in parallel. Each received file is stored on one of the back-up storage devices being a member of the group specified in the destination parameter. When that back-up storage device is full or can not receive files, the file back-up process cascades to the next storage device in the group. Files can be transferred to storage devices in different groups in parallel.

81 Claims, 7 Drawing figures

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw D
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☐ 1. Document ID: US 5671350 A

L17: Entry 1 of 1

File: USPT

Sep 23, 1997

US-PAT-NO: 5671350

DOCUMENT-IDENTIFIER: US 5671350 A

TITLE: Data backup system with methods for stripe affinity backup to multiple archive devices

DATE-ISSUED: September 23, 1997

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Wood; Timothy E.	San Francisco	CA		

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
Sybase, Inc.	Emeryville	CA			02

APPL-NO: 08/ 630149 [PALM]

DATE FILED: April 10, 1996

PARENT-CASE:

This is a continuation patent application of Ser. No. 08/129,942 filed Sep. 30, 1993, now U.S. Pat. No. 5,515,507.

INT-CL: [06] C06 F 13/00

US-CL-ISSUED: 395/182.13

US-CL-CURRENT: 714/15

FIELD-OF-SEARCH: 395/182.13, 395/182.14, 395/182.16, 395/182.19, 395/600, 335/650, 364/285.2, 364/285, 364/955, 364/957, 364/957.1

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
<u>5043871</u>	August 1991	Nishigaki et al.	364/200
<u>5138710</u>	August 1992	Kruesi et al.	395/575
<u>5379418</u>	January 1995	Simazaki et al.	395/575

<u>5446884</u>	August 1995	Schwendemann et al.	395/600
<u>5455946</u>	October 1995	Mohan et al.	395/600

OTHER PUBLICATIONS

Press Release, "Data Tools Announces SQL-Backtrack for Sybase, The Complete Database Backup and Recovery Tool." Dec. 21, 1992.

ART-UNIT: 243

PRIMARY-EXAMINER: Beausoliel, Jr.; Robert W.

ASSISTANT-EXAMINER: Wright; Norman M.

ATTY-AGENT-FIRM: Smart; John A. Slone; David N.

ABSTRACT:

A data backup system implements coordination between a Database Server and a Backup Server to produce a recoverable database dump. By utilizing a technique referred to as stripe affinity, a mechanism is disclosed for ensuring the integrity of a database backup made to multiple archive devices simultaneously. In addition, by utilizing stripe affinity, archived data may be reloaded from fewer archive devices than were used to make the original backup.

A task scheduler mechanism allocates processor time among the tasks that comprise the backup system. In this way the I/O service tasks can process their event queues while the current set of allocation pages are also being processed.

21 Claims, 9 Drawing figures

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw De
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L1: Entry 2 of 2

File: DWPI

Nov 10, 1994

DERWENT-ACC-NO: 1994-358517

DERWENT-WEEK: 200433

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TITLE: Remote data mirroring system for automatically providing and maintaining remote secondary data - has secondary memory and controller coupled to primary memory to receive primary data without host computer intervention

INVENTOR: ALTERESCU, B; CASTEL, D ; SHKLARSKY, G ; VISHLITZKY, N ; YANAI, M ; SHKLARSKY, G G ; OFEK, Y ; CASTEL, D D C

PATENT-ASSIGNEE: EMC CORP (EMCEN), ALTERESCU B (ALTEI), CASTEL D (CASTI), VISHLITZKY N (VISHI), YANAI M (YANAI), SHKLARSKY G G (SHKLI)

PRIORITY-DATA: 1993US-0052039 (April 23, 1993), 1990US-0586796 (September 24, 1990), 1990US-0587247 (September 24, 1990), 1990US-0587253 (September 24, 1990), 1996US-0665607 (June 18, 1996), 1997US-0851701 (May 6, 1997), 1996US-0601733 (February 15, 1996), 1997US-0947926 (October 9, 1997), 1996US-0665602 (June 18, 1996), 1999US-0305127 (May 4, 1999), 1998US-0085868 (May 28, 1998), 2000US-0711212 (November 9, 2000), 2002US-0100760 (March 19, 2002), 1996US-0654511 (May 28, 1996), 1998US-0061708 (April 17, 1998), 2000US-0709814 (November 10, 2000), 2002US-0224138 (August 20, 2002)

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PATENT-FAMILY:

	PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC
<input type="checkbox"/>	WO 9425919 A1	November 10, 1994	E	022	G06F012/16
<input type="checkbox"/>	AU 9466380 A	November 21, 1994		000	
<input type="checkbox"/>	EP 695443 A1	February 7, 1996	E	001	
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<input type="checkbox"/> <u>US 6185653 B1</u>	February 6, 2001	000	G06F012/02
<input type="checkbox"/> <u>US 6247046 B1</u>	June 12, 2001	000	G06F015/16
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<input type="checkbox"/> <u>US 20020147886 A1</u>	October 10, 2002	000	G06F012/00
<input type="checkbox"/> <u>KR 323903 B</u>	June 20, 2002	000	G06F012/16
<input type="checkbox"/> <u>US 20030005355 A1</u>	January 2, 2003	000	H04L001/22
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DESIGNATED-STATES: AU CA JP KR AT BE CH DE DK ES FR GB GR IE IT LU MC NL PT SE DE
FR GB IT DE FR GB IT

CITED-DOCUMENTS:US 4710870; US 4755928 ; US 5051887 ; US 5146605 ; 1.Jnl.Ref ; US
5155845

APPLICATION-DATA:

PUB-NO	APPL-DATE	APPL-NO	DESCRIPTOR
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KR 323903B		KR 96702127	Previous Publ.
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US20030005355A1		US 6173377	Div ex
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US 6587919B2		US 6185653	Div ex
US 6587919B2		US 6418509	Div ex
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US 6647474B2	May 28, 1996	1996US-0654511	Cont of
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US 6647474B2		US 6173377	Div ex
US 6647474B2		US 6502205	Div ex

US 20020147886 A1 INT-CL (IPC): G06 F 3/06; G06 F 11/14; G06 F 11/16; G06 F 11/20; G06 F 12/00; G06 F 12/02; G06 F 12/04; G06 F 12/08; G06 F 12/16; G06 F 13/00; G06 F 13/20; G06 F 13/38; G06 F 13/42; G06 F 15/16; G06 F 15/17; H02 H 3/05; H04 L 1/22

RELATED-ACC-NO: 1993-152025;1993-404302 ;1994-248718 ;1998-260868 ;1999-243439 ;1999-302242 ;2000-270481 ;2000-328326 ;2001-326639 ;2003-311594 ;2003-327764 ;2003-830438 ;2004-355455

ABSTRACTED-PUB-NO: EP 695443B
BASIC-ABSTRACT:

The data mirroring system has a primary host computer located in a first geographic location, together with a primary data memory system coupled to the computer for data storage and access. A secondary data memory system with an associated controller is located in a second geographical location, coupled to the primary storage system by a high-speed communication link.

A primary system controller maintains a list of primary data which is to be copied and stored as secondary data. It coordinates and controls the primary data copying without any intervention from the host computer and is responsive to acknowledgements from the secondary controller.

USE/ADVANTAGE - Storing data on disc drives at location remote from main data storage disc. Provides automatic mirroring of data to remote storage system, without requiring any intervention by host computer, thereby achieving very high data integrity.

ABSTRACTED-PUB-NO: US 5544347A
EQUIVALENT-ABSTRACTS:

The data mirroring system has a primary host computer located in a first geographic location, together with a primary data memory system coupled to the computer for data storage and access. A secondary data memory system with an associated controller is located in a second geographical location, coupled to the primary storage system by a high-speed communication link.

A primary system controller maintains a list of primary data which is to be copied

and stored as secondary data. It coordinates and controls the primary data copying without any intervention from the host computer and is responsive to acknowledgements from the secondary controller.

USE/ADVANTAGE - Storing data on disc drives at location remote from main data storage disc. Provides automatic mirroring of data to remote storage system, without requiring any intervention by host computer, thereby achieving very high data integrity.

A system for automatically providing and maintaining data, said system comprising:

a host computer located in a first geographic location;

a first data storage system located in a first geographic location and coupled to said host computer, for storing data to be accessed by at least said host computer;

a second data storage system located in a second geographic location geographically remote from said first location, coupled to said first data storage system, for receiving at least data from said first data storage system; and

said first data storage system enabling transfer of said data to said second data storage system, concurrently with said data received from said host computer, so as to nearly simultaneously maintain a concurrent copy of data stored on said first data storage system and on said second data storage system wherein both said first and said second data storage systems maintain an index, said index including at least a first indicator providing an indication of whether a predetermined data element stored on said first data storage system is valid, and at least a second indicator providing an indication of whether said predetermined data element stored on said second data storage system is valid.

US 5664144A

Apparatus for transforming and mapping variable-length CKD formatted data records onto fixed block disk drives, and for retrieving a requested data record stored on a fixed block disk drive, comprising:

means for receiving a plurality of variable-length CKD formatted data records, each of said variable-length CKD formatted data records including at least a record identification portion and a data portion;

means, responsive to said means for receiving, for transforming the plurality of variable-length CKD formatted data records to a fixed block format, and for storing the plurality of fixed block format data records on one or more fixed block disk drives;

means, responsive to said means for transforming and storing, for generating a plurality of record locator indices, each of said plurality of record locator indices associated with one of said plurality of data records, for uniquely identifying the location of each of said plurality of data records stored on said one or more fixed block disk drives, and also including means for transforming and encoding said plurality of record locator indices and record identification portions to produce encoded information reduced in length in comparison to the length of said record identification portions and record locator indices;

semiconductor memory, for storing said encoded information in a record locator table;

means for requesting access to said requested data record, and for providing a record identification portion corresponding to said requested data record;

mean, responsive to said means for requesting access to said requested data record, for searching said record locator table stored in said semiconductor memory, for decoding from said encoded information an associated one of said record locator indices corresponding to said requested data record; and

record retrieval means, responsive to said means for searching, for retrieving from said one or more fixed block disk drives, said requested data record as directed by said associated one of said record locator indices corresponding to said requested data record.

US 5909692A

The data mirroring system has a primary host computer located in a first geographic location, together with a primary data memory system coupled to the computer for data storage and access. A secondary data memory system with an associated controller is located in a second geographical location, coupled to the primary storage system by a high-speed communication link.

A primary system controller maintains a list of primary data which is to be copied and stored as secondary data. It coordinates and controls the primary data copying without any intervention from the host computer and is responsive to acknowledgements from the secondary controller.

USE/ADVANTAGE - Storing data on disc drives at location remote from main data storage disc. Provides automatic mirroring of data to remote storage system, without requiring any intervention by host computer, thereby achieving very high data integrity.

US 5960216A

The data mirroring system has a primary host computer located in a first geographic location, together with a primary data memory system coupled to the computer for data storage and access. A secondary data memory system with an associated controller is located in a second geographical location, coupled to the primary storage system by a high-speed communication link.

A primary system controller maintains a list of primary data which is to be copied and stored as secondary data. It coordinates and controls the primary data copying without any intervention from the host computer and is responsive to acknowledgements from the secondary controller.

USE/ADVANTAGE - Storing data on disc drives at location remote from main data storage disc. Provides automatic mirroring of data to remote storage system, without requiring any intervention by host computer, thereby achieving very high data integrity.

US 6038605A

The data mirroring system has a primary host computer located in a first geographic location, together with a primary data memory system coupled to the computer for data storage and access. A secondary data memory system with an associated controller is located in a second geographical location, coupled to the primary storage system by a high-speed communication link.

A primary system controller maintains a list of primary data which is to be copied and stored as secondary data. It coordinates and controls the primary data copying without any intervention from the host computer and is responsive to acknowledgements from the secondary controller.

USE/ADVANTAGE - Storing data on disc drives at location remote from main data storage disc. Provides automatic mirroring of data to remote storage system, without requiring any intervention by host computer, thereby achieving very high data integrity.

US 6185653B

The data mirroring system has a primary host computer located in a first geographic location, together with a primary data memory system coupled to the computer for data storage and access. A secondary data memory system with an associated controller is located in a second geographical location, coupled to the primary storage system by a high-speed communication link.

A primary system controller maintains a list of primary data which is to be copied and stored as secondary data. It coordinates and controls the primary data copying without any intervention from the host computer and is responsive to acknowledgements from the secondary controller.

USE/ADVANTAGE - Storing data on disc drives at location remote from main data storage disc. Provides automatic mirroring of data to remote storage system, without requiring any intervention by host computer, thereby achieving very high data integrity.

US 6247046B

The data mirroring system has a primary host computer located in a first geographic location, together with a primary data memory system coupled to the computer for data storage and access. A secondary data memory system with an associated controller is located in a second geographical location, coupled to the primary storage system by a high-speed communication link.

A primary system controller maintains a list of primary data which is to be copied and stored as secondary data. It coordinates and controls the primary data copying without any intervention from the host computer and is responsive to acknowledgements from the secondary controller.

USE/ADVANTAGE - Storing data on disc drives at location remote from main data storage disc. Provides automatic mirroring of data to remote storage system, without requiring any intervention by host computer, thereby achieving very high data integrity.

US 6418509B

The data mirroring system has a primary host computer located in a first geographic location, together with a primary data memory system coupled to the computer for data storage and access. A secondary data memory system with an associated controller is located in a second geographical location, coupled to the primary storage system by a high-speed communication link.

A primary system controller maintains a list of primary data which is to be copied and stored as secondary data. It coordinates and controls the primary data copying without any intervention from the host computer and is responsive to

acknowledgements from the secondary controller.

USE/ADVANTAGE - Storing data on disc drives at location remote from main data storage disc. Provides automatic mirroring of data to remote storage system, without requiring any intervention by host computer, thereby achieving very high data integrity.

US20020147886A

The data mirroring system has a primary host computer located in a first geographic location, together with a primary data memory system coupled to the computer for data storage and access. A secondary data memory system with an associated controller is located in a second geographical location, coupled to the primary storage system by a high-speed communication link.

A primary system controller maintains a list of primary data which is to be copied and stored as secondary data. It coordinates and controls the primary data copying without any intervention from the host computer and is responsive to acknowledgements from the secondary controller.

USE/ADVANTAGE - Storing data on disc drives at location remote from main data storage disc. Provides automatic mirroring of data to remote storage system, without requiring any intervention by host computer, thereby achieving very high data integrity.

WO 9425919A

CHOSEN-DRAWING: Dwg.1/3 Dwg.6/7

DERWENT-CLASS: T01

EPI-CODES: T01-H01B1; T01-H01C4;

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